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**By E-mail**

September 10, 2021

AUSA Kimberly Ravener  
AUSA Kyle Wirshba  
United States Attorney's Office  
Southern District of New York  
1 Saint Andrews Plaza  
New York, New York 10007

**Re:    *United States v. Virgil Griffith,*  
      20 Cr. 15 (PKC)**

Dear Counsel:

We write in response to the government's August 21, 2021, and in order to amend our August 30, 2021 expert disclosure with regard to Mr. Antonopoulos.<sup>1</sup> For ease of reference, we have included a redline showing the amendments.

As noted in our August 30 letter, although we did not request expert notice pursuant to Federal Rule of Criminal 16(b)(1)(G) so no reciprocal disclosure is required, *see* Fed. R. Crim. P. 16(b)(1)(C)(i), in an effort to streamline these proceedings to preserve judicial and party resources, we inform you that, to the extent Mr. Griffith presents an affirmative defense case, he may call the following witnesses to offer expert testimony on the topics described below.

**Andreas M. Antonopoulos**

- As set forth in more detail in his *curriculum vitae*, which is attached, Mr. Antonopoulos is an expert in cryptocurrency, Bitcoin, Ethereum, and blockchain technology. He has worked almost exclusively in the blockchain industry since at least 2012. His education and professional qualifications to offer the below-described opinions are set forth in

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<sup>1</sup> As previously disclosed, Ms. Amber Vitale is expected to testify about the topics previously identified under the heading "OFAC Expert" in the defense's August 30 disclosure.



detail his *curriculum vitae*. Mr. Antonopoulos is more than qualified to offer his expected expert testimony.

- In forming his opinions, Mr. Antonopoulos has relied upon his education, knowledge, experience, and training in computer science and blockchain technology, as well as his specific and extensive education, knowledge, experience, and training in the fields of computer science, blockchain technology, Ethereum, data communications, networks, and distributed systems. As part of the basis for his opinions, Mr. Antonopoulos may rely upon his own research and publications in this field as well as other similar cryptocurrency conferences he has attended at which Mr. Antonopoulos and others presented the same or similar information to their audiences. Mr. Antonopoulos also has reviewed relevant portions of the government's discovery produced as of the date of this notice, as well as discovery produced by counsel for Mr. Griffith pursuant to his obligations under Rule 16(b)(1)(A).
- Based on the foregoing training and experience, as well as his review of discovery materials in this case, Mr. Antonopoulos is expected to offer the following background testimony:
  - Explain the background and characteristics of blockchain networks, including the culture and operation of open-sourced software, how decentralization works and secures these networks, and how tokens are created and used in blockchain networks.
  - Explain the terminology of cryptocurrency, which refers to certain blockchain token and is also called digital assets, that it is designed to work as a medium of exchange and/or a store of value, how types of cryptocurrencies (*e.g.*, Bitcoin, Ether, *etc.*) differ, and the nature of the exchanges on which cryptocurrencies are transacted. (This will include a discussion of an Ether transaction involving 1 Ether, *i.e.*, what happens when a party "sends" 1 Ether to another party.)
  - Provide background information regarding Ethereum and the Ethereum Foundation, including but not limited to the Ethereum network's creation, its unique contributions to blockchain development, the nature of its open-source software, including what applications use the network, the role that Ether tokens play on Ethereum, the role Ether plays in the world of digital currency, the function of the Ethereum Foundation and its goals, and smart contracts more generally.
  - Explain that an Internet Protocol address, commonly referred to as an "IP address" is an address that identifies a device on the internet or a local network. Internet Protocol is the set of rules governing the format of data sent via the internet or local network. Further:



- In essence, IP addresses allow information to be sent between devices on a network: they contain location information and make devices accessible for communication. The internet needs a way to differentiate between different computers, routers, and websites. IP addresses provide a way of doing so and form an essential part of how the internet works.
  - Explain what a “VPN” is and how Internet users use VPNs to establish protected network connections when using public networks, including but not limited to the use and significance of encryption associated with VPNs when trying to determine the location or identity of a particular Internet user.
- As part of that background testimony, we expect that Mr. Antonopoulos will testify about the following terms of art, among others, that are relevant to the jury’s determination—and beyond the ken of the average person’s understanding—in this case:
  - Open-source software
  - Protocol specification
  - Ethereum Clients
  - Ethereum Network(s)
  - Ethereum Blockchain
  - Ether Currency
  - Ethereum Miners
  - Ethereum Nodes
  - Ethereum Transactions
  - Smart Contracts
  - Nodes
- Based on the foregoing training and experience, as well as his review of discovery materials in this case, Mr. Antonopoulos is expected to offer the following expert opinions:
  - The term “node” is not specific to Ethereum and refers to a computer that is part of any computer network including the Internet itself. Nodes perform a variety of purposes not limited to Ethereum, cryptocurrency or blockchain technology but more broadly relate to computer networks, including the Internet and Internet access generally.



- The information allegedly disclosed by Mr. Griffith at the Pyongyang cryptocurrency conference was neither unique to that conference nor prepared or tailored specifically to that conference and indeed consisted of publicly available information that could have been accessed by an individual with access to the Internet, including but not limited to similar presentations given by Mr. Griffith in other fora.
- Nothing about the information presented by Mr. Griffith or others during the Pyongyang cryptocurrency conference was tailored to or otherwise unique to that particular event or locale. The information allegedly presented by Mr. Griffith was known ubiquitously in this industry, easily accessible to anyone with an Internet connection, and even to individuals without Internet access because the topics he discussed also have been published in numerous books, including those in the Korean language.
- VPNs are commonly used by nations like DPRK to avoid and evade sanctions, which otherwise would prohibit users in the DPRK or operating on behalf of the DPRK from accessing Internet services and networks.
- His observations based upon his review of the information provided by Oath, Inc. in response to a subpoena issued by counsel for Mr. Griffith.
- The Verizon records provide no basis to believe that the DPRK Email Account was accessed or otherwise acted upon within the Southern District of New York in response to Mr. Griffith's email to dprk.un@verizon.net. To the contrary, available information strongly supports the conclusion that it was not.
- The accuracy with which one could predict whether the DPRK Email Account was accessed from a location within the United States—let alone from within the Southern District of New York—is vanishingly small to non-existent and certainly well below a 50/50 chance.

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Mr. Griffith explicitly reserves the right to further amend and/or supplement these disclosures based upon, among other things, additional discovery produced, counsel's ongoing review of the recent productions, trial preparation, disclosures about anticipated witness



AUSAs Ravener and Wirshba


September 10, 2021

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testimony, and ultimately the evidence (testimonial or opinion) offered in the government's direct case.

As always, we remain available to discuss this or any other aspect of the case.

Sincerely,



Brian E. Klein  
Keri Curtis Axel  
Waymaker LLP

-and-

Sean S. Buckley  
Kobre & Kim LLP

*Attorneys for Virgil Griffith*

Encl.

**Andreas M. Antonopoulos**

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- In forming his opinions, Mr. Antonopoulos has relied upon his education, knowledge, experience, and training in computer science and blockchain technology, as well as his specific and extensive education, knowledge, experience, and training in the fields of computer science, blockchain technology, Ethereum, data communications, networks, and distributed systems. As part of the basis for his opinions, Mr. Antonopoulos may rely upon his own research and publications in this field as well as other similar cryptocurrency conferences he has attended at which ~~Mr. Griffith~~Mr. Antonopoulos and others presented the same or similar information to their audiences. Mr. Antonopoulos also has reviewed relevant portions of the government's discovery produced as of the date of this notice, as well as discovery produced by counsel for Mr. Griffith pursuant to his obligations under Rule 16(b)(1)(A).
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  - Provide background information regarding Ethereum and the Ethereum Foundation, including but not limited to the Ethereum network's creation, its unique contributions to blockchain development, the nature of its open-source software, including what applications use the network, the role that Ether tokens play on Ethereum, ~~and~~ the role Ether plays in the world of digital currency, ~~as well as~~ the function of the Ethereum Foundation and its goals, and smart contracts more generally.
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network. Internet Protocol is the set of rules governing the format of data sent via the internet or local network. Further:

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cryptocurrency or blockchain technology but more broadly relate to computer networks, including the Internet and Internet access generally.

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- VPNs are commonly used by nations like DPRK to avoid and evade sanctions, which otherwise would prohibit users in the DPRK or operating on behalf of the DPRK from accessing Internet services and networks.
- ~~○ Individuals accessing the Internet from an ISP or IP address located in or traceable to the DPRK would not be able to access directly a U.S. based ISP, including Verizon.net or Amazon Cloud Services.~~
- His observations based upon his review of the information provided by Oath, Inc. in response to a subpoena issued by counsel for Mr. Griffith.
- The Verizon records provide no basis to believe that that the DPRK Email Account was accessed or otherwise acted upon within the Southern District of New York in response to Mr. Griffith's email to dprk.un@verizon.net. To the contrary, available information strongly supports the conclusion that it was not.
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